

$$D_{g \circ f} = \{x \in D_f \mid f(x) \in D_g\} \quad f(x) = \sqrt{\log_r^{(x-1)}} \quad x > 1 \quad x-1 \geq 1 \quad x \geq 2 \quad D_f = [2, +\infty)$$

$$g(x) = \sqrt{-(x-2)^2} \quad D_g = \{2\} \quad \sqrt{\log_r^{(x-1)}} = 2 \quad \log_r^{(x-1)} = 4 \quad x-1 = 4 \quad x = 5 \quad D_{g \circ f} = [2, +\infty) \cap \{5\} = \{5\}$$

$$f \circ g(x) = 2(x^2 - 2x + 1) - 2 = 2x^2 - 4x + 11 \quad g \circ f(x) = (2x - 2)^2 - 2(2x - 2) + 11 = 4x^2 - 4x + 11$$

$$2x^2 - 4x + 11 = 4x^2 - 4x + 11 \quad 2x^2 - 4x + 11 = 0 \quad \alpha^2 + \beta^2 = (\alpha + \beta)^2 \quad \alpha + \beta = 10 \quad \frac{\alpha + \beta = 10}{\alpha \beta = \frac{11}{2}} \rightarrow 100 - 11 = 81$$

$$g(x) = \frac{1}{x} x^2 + 11 \quad g(x-1) = \frac{1}{x-1} x^2 + \frac{1}{x-1} x + \frac{1}{x-1} \quad a \text{ د } b \text{ مساوی} = -1 \rightarrow \text{مساوی} = 11$$

$$f \circ g(x) = 2x^2 - 4x + 11 \quad f \circ g(x) = 2x^2 - 4x + 11 \quad g(x) = x^2 - 2x + 1 = (x-1)^2 \quad g \circ f(x) = (2x - 2)^2$$

$$g \circ f(x) = 4x^2 - 4x + 11$$

$$f(0) - g(0) = 1 \quad f(0) = 1 \quad g(0) = 0 \quad f(0) = g(0) = 1$$

$$f(0) - g(0) = 1 \quad f(0) = 1 \quad g(0) = 0 \quad f(0) = g(0) = 1$$

$$f(x) = 2x + 1 \quad g(x) = 2x - 1 \quad f \circ g(x) = 4x - 1 \quad a = \text{مساوی} = -\frac{1}{x}$$

$$f \circ g(x) = 4x - 1 \quad g \circ f(x) = 4x - 1 \quad f(x) = 2x + 1 \quad g(x) = 2x - 1$$

$$\frac{x^2 - 1}{x} = x - \frac{1}{x} \quad (x - \frac{1}{x})^2 = x^2 - 2 + \frac{1}{x^2} \quad f(x - \frac{1}{x}) = x^2 - 2 + \frac{1}{x^2} + x - \frac{1}{x}$$

$$f(x) = x^2 + x$$

$$D_{f \circ g} = \{x \in D_g \mid g(x) \in D_f\} \quad D_g = \mathbb{R} \quad R_g = (-\infty, 1] \quad D_f = (0, +\infty) \quad \Lambda x - x^2 > 0$$

$$x^2 - \Lambda x < 0 \quad \frac{0}{+1-1+} \quad A = D_{f \circ g} = (0, 1) \quad R_g = D_f \quad R_g = (-\infty, 1] \rightarrow B = R_{f \circ g} = (-\infty, 1]$$

$$A \cap B = (0, 1] \quad \text{مساوی} = 1 \rightarrow \{1, 2, 3, 4\}$$

$$f(x) = 1 - 2x^2 \quad h \circ g(x) = (x-1)^2 + 2(x-1) + 1 = x^2 - 2x^2 + 2x - 2 \quad x^2 - 2x^2 + 2x - 2 = 1 - 2x^2$$

$$x^2 + 2x - 2 = 0 \quad \text{مساوی} = 1$$

$$g(3) = 1 \rightarrow x - \frac{1}{x} = 3 \quad \frac{x^2 - 3x - 1}{x} = 0 \quad (x-1)(x+1) = 0$$

$$\begin{cases} x = 1 \rightarrow g \circ f(x) = 4a + 2(1) = 1 & a = 0 \\ x = -1 \rightarrow g \circ f(x) = -a + 2(-1) = 1 & a = -1 \end{cases}$$